



UNITED STATES  
**NUCLEAR REGULATORY COMMISSION**  
ADVISORY COMMITTEE ON NUCLEAR WASTE  
WASHINGTON, DC 20555 - 0001

ACNWR-0238

May 2, 2006

The Honorable Nils J. Diaz  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

SUBJECT: RISK-INFORMED DECISION-MAKING FOR NUCLEAR MATERIALS AND  
WASTES

Dear Chairman Diaz:

At its 167<sup>th</sup> meeting on January 10, 2005, the Advisory Committee on Nuclear Waste heard a presentation on the draft guidance document titled, "Risk-Informed Decision-Making for Nuclear Material and Waste Applications." This document was prepared by the staff in response to the Nuclear Regulatory Commission policy statement on the use of probabilistic risk assessment methods in nuclear regulatory activities (60 FR 42622, August 16, 1995), and its implementation as directed by Staff Requirements Memorandum SECY-04-0182 "Status Of Risk-informed Regulation in the Office of Nuclear Material Safety and Safeguards," dated January 18, 2005.

**BACKGROUND AND OBSERVATIONS**

Application of the methods and techniques described in the draft guidance is an important step forward in establishing a viable approach for risk-informing the nuclear materials and waste regulatory activities. Three parts are needed for the process to work: (1) the regulatory framework to ensure the appropriate use of risk information, (2) the infrastructure (e.g., expertise, tools, data, guidance documents) to generate and support the use of risk information, and (3) a decisionmaking process that recognizes the value of risk information. The draft guidance document focuses primarily on 1 and 3. It remains to be seen if the infrastructure (e.g., expertise, data, and tools) is fully in place to support the document's implementation.

The draft guidance includes risk metrics applicable to imposing new safety requirements or changing existing requirements but not doing licensing reviews or inspections. The expectation is that the document supplements existing guidance by addressing accident risk to individuals. Routine and chronic doses are addressed by existing regulations and guidance.

The staff defines three regions of individual risk: unacceptable, tolerable, and negligible. Quantitative health guidelines (QHGs) are used to determine the negligible risk level, below which resources should not be used to reduce a risk contributor. Separate options for workers and the public are defined for acute and latent fatality and injury. The QHGs for the public are the same as the quantitative health objectives (QHOs) for the reactor safety goals. The Committee agrees that these guidelines are appropriate for use as a screening tool in setting requirements.

The draft guidance provides three options for comparison of contributors to the QHGs. Option 1 partitions the dose limit into event frequency intervals, Option 2 rolls up all contributors into a single expectation value of annual dose, and Option 3 expresses stochastic health effects in an expectation value of annual dose for the worker and public separately for acute, latent, and serious injury. Although any one of the three proposed options could be used to support risk-informed decisions, Option 3 provides the most useful information for assessing sources of uncertainty.

The Committee strongly supports risk-informing regulatory decisionmaking and believes that the draft guidance can provide valuable assistance to the staff in carrying out the Commission's policy.

### **RECOMMENDATIONS**

The Committee recommends that the staff consider the feasibility of applying the draft guidance to the following:

- low-level waste issues and adequacy of the regulatory infrastructure to meet future challenges in this area
- rulemaking and licensing of in-situ leach uranium recovery facilities, with an emphasis on groundwater protection at leaching sites
- fuel cycle issues, including design criteria for reprocessing spent nuclear fuel and decommissioning costs
- strengthening the reliability and durability of institutional controls
- identifying ways to improve the design and construction of reactor and materials facilities to lessen the environmental impact and increase the efficiency of decommissioning
- potential revisions to Part 40 for conversion facilities
- risk-informing the licensing processes that use standard review plans for independent spent fuel storage installations and decommissioning

The staff should continue to develop the infrastructure needed to accommodate new initiatives to risk-inform regulatory decisionmaking.

The Committee also recommends periodic reviews of the draft guidance as experience is gained with its implementation and lessons are learned.

Finally, the Committee recommends that summary information and training be used to raise staff awareness about the value of this guidance for decisionmaking.

May 2, 2006

As indicated in the FY 2006-2007 ACNW Action Plan, the Committee plans to focus on the document's application to ongoing nuclear material and waste regulatory activities. The Committee looks forward to continued interaction with the staff and periodic updates as the draft guidance is used to risk-inform regulatory decisionmaking for nuclear materials and waste and as the infrastructure needed to implement the guidance develops.

Sincerely,

**/RA/**

Michael T. Ryan  
Chairman

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Sincerely,

Michael T. Ryan  
Chairman

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